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A PRAGMATIC PERSPECTIVE TO KNOWLEDGE ADAPTION: BOUNDARY OBJECTS IN IT OUTSOURCING1

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A PRAGMATIC PERSPECTIVE TO KNOWLEDGE ADAPTION: BOUNDARY OBJECTS IN IT OUTSOURCING[1]

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Abstract

Based on a multi-case study from a pragmatic perspective to knowledge adaption, this research plans to analyse the processes of knowledge codification, transfer and integration in the context of IT outsourcing. It plans to address the following research question: how do IT service vendors successfully adapt their knowledge to new businesses. We plan to collect data from vendors both in China and New Zealand. Our findings will uncover the mechanisms and rationales underlying the processes of IT service vendors' knowledge adaption. Our contributions may be threefold. First, from the pragmatic perspective to knowledge adaption, we develop a new theory to address the conflicts about whether existing knowledge in organizations can improve performance of new businesses. Second, we contribute to the literature of organizational learning, especially to studies on learning in communities of practice. We plan to provide new a theoretical lens to explaining how organizations can adapt different knowledge to new businesses by using appropriate boundary objects, and to uncover what specific conditions can make such knowledge adaption successful. Lastly, this study plans to shed new light on how IT service vendors adapt to turbulent markets.

Keywords: Knowledge Adaption, Boundary Objects, A Pragmatic Perspective, IT outsourcing, Cases Study.

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1 INTRODUCTION

In today's IT outsourcing industry, vendors face highly turbulent markets (Su, Mao, & Jarvenpaa, 2014), which forces vendors to operate effectively in knowledge management and adaption (Du & Pan, 2013). More specifically, while scanning environmental changes, IT service vendors increasingly recognize that it is difficult to survive in the long run by just providing low-cost, low value-adding, labour intensive services (Chinasourcing, 2014). One particular strategy is to enter new markets and conduct new businesses (Feeny & Willcocks, 1998; Galunic & Eisenhardt, 1996). What matters the most is whether or not vendors can make good use of experience and knowledge by adapting them to new businesses. However, such knowledge adaption can be a costly process that can reduce client' satisfaction or vendors' performance (Du & Pan, 2013). For example, N. Su (2015) found that lacking a good understanding of different cultural knowledge structures of clients from different markets may lead to problems in knowledge adjustment, which impedes high performance.

However, prior studies on the relationship between vendors' existing experience/knowledge and performance of new businesses are mixed. Some studies find that experience and knowledge in existing markets can enable vendors to efficiently adapt to new ones (Du & Pan, 2013). Others find the opposite, e.g., Su et al. (2014) describe a situation where a Chinese vendor who was highly successful in the Japanese market failed to be profitable in the Chinese domestic markets when it used accumulated managerial experience to guide new businesses.

We believe that one of the key factors that affect vendors' ability to adapt existing knowledge is their ways to adapt knowledge. Different knowledge appeals to different ways in which boundary objects---objects that work to establish a shared context (Star, 1989)--- play a significant role in handling the knowledge transfer (Carlile, 2002, 2004). Exploring how vendors effectively adapt existing knowledge by using boundary objects will help vendors have higher possibilities of survival as well as better performance in new markets. However, the specific mechanisms underlying knowledge transferring within IT service vendors are understudied. As a result, in this research, taking the vendors' perspective, we have the following research question: How do IT service vendors successfully transfer existing knowledge into new markets? Particularly, in this study, by unfolding the processes of adapting activities, we plan to explore boundary objects, their conditions, and mechanisms in which IT outsourcing vendors can successfully adapt experience and knowledge to new businesses.

The reasons for focusing on the context of IT outsourcing are twofold. First, targeting at impetus for new business and improving performance, IT service vendors always need to integrate and utilize existing knowledge and experience when they are in confront of new markets (Gopal & Gosain, 2010; Teo & Bhattacherjee, 2014). It is of necessity to coordinate among functional departments (Bechky, 2003a, 2003b) in the processes of knowledge integration and utilization. In these processes, boundary objects are influential factors (Star, 1989). IT service vendors often employ kinds of boundary objects, such as accounting systems, standardized forms, cases repositories, et al, in their daily jobs. The ways different departments utilize these boundary objects will help us figure out how vendors adapt knowledge within organizations. Second, knowledge adaption often involves several functional departments or teams whose interests may be distinct. The success of knowledge adaption not only relies on capacity of boundary-spanning (Du & Pan, 2013), but also on willingness of different groups (Hansen, 1999). The willingness actually depends on distinguished interests. Consequently, different interests of different groups should be taken into consideration (Carlile, 2004). In the context of IT outsourcing, different groups or projects, especially in the vendors with a structure of functional departments, need to coordinate for task completion. People from different departments, representing

different interests, need to interact and communicate with each other. They use and interpret the boundary objects in different ways. They need to integrate these different interpretations so that they can successfully adapt their knowledge to fulfil business. This situation is ideally suited for our research question.

To address the research question, we plan to conduct a longitudinal multi-case study. We plan to select cases from vendors both in China and New Zealand. The sample cases should be suitable for our theoretical sampling, which means the selected cases should provide the context for our research topic. For example, sample cases should be experienced in knowledge adaption between existing and new business/markets. Moreover, the cases must have successfully used boundary objects to facilitate different groups' processes of knowledge adaption. We contribute to the literature of boundary-spanning knowledge transfer in the context of IT outsourcing and organizational learning in community of practice.

2 THEORETICAL BACKGROUNDS

In this section, we divide our literature review into two parts. In the first part, we focus on the related studies regarding our research questions. We show how the extant literature has tried to address similar questions, and then we highlight gaps in the literature. More specifically, we first present the related antecedent factors which have effects on process of adapting experience. Then we discuss the mixed results of prior studies on performance of adapting experience to highlight the opportunity of research contributions. In the second part, we introduce the pragmatic perspective to knowledge adaption as our reference theoretical lens to assist us in analysing data and building up our own process theory.

2.1 Antecedents of Adapting Knowledge and Mixed Results

In the prior research, many studies discussed the antecedents that influence the process of adapting experience. The mainstream of studies have treated organizational learning as a main proxy of these knowledge adaption behaviours (Iyengar, Sweeney, & Montealegre, 2015). They empirically examine factors impacting on knowledge adaption by basically studying on factors affecting organizational learning. For example, negative emotion is one of the influential factors. As project failure is one of the important sources for organizational learning, Shepherd, Haynie, and Patzelt (2013) empirically examined the effects of negative emotions over project failure, coping orientations, and time since project failure on individual learning. They found that the more individual concerned the loss of project failure, which incurred negative emotions, the more individuals could learn from experience when individuals dealt with new projects. Meanwhile, inter-organizational knowledge transfer and sharing, which happen between IT service vendors and clients, also facilitate knowledge adaption within vendors (Koh, Ang, & Straub, 2004). Du and Pan (2013) also found that boundary-spanning knowledge transfer in client-vendor relationships could encourage vendors themselves to reinforce knowledge adaption in their different projects. Moreover, people move from one department to another act as ambassadors who can help organizational learning (Argote, 2012). These people can speak different working "languages" in different departments, and act as weak ties to connect different knowledge as well as to accelerate knowledge flows (Hansen, 1999).

Other studies highlighted that the situated learning in communities of practice plays a vital role and found that contexts are influential in organizational learning (Lave & Wenger, 1991; Wenger, 1999).

For example, Lave and Wenger (1991) conceptualized the social context of learning as a community of practice, and stated that knowledge adaption as well as learning happens in interaction and sharing interpretations among members under specific contexts. Therefore, if different communities want to transfer knowledge, they need to speak the same "language" and have the common interpretations. As a result, knowledge brokers, also called boundary spanners for knowledge, are designated to act as common ground where knowledge adaption can happen effectively (Teece, 2007). Plus, boundary objects can also be competent as common ground (Carlile, 2002, 2004; Kellogg, Orlikowski, & Yates, 2006). Boundary objects are any objects that are relevant to practice of multiple communities, but are used or viewed differently by different groups of people (Brown & Eisenhardt, 1997). Boundary objects have 4 types which include repository (i.e., database, libraries), standardized forms and methods (i.e., standard report forms, Q&A report forms), objects or models (i.e., artifacts, information systems, concepts, accounting systems), maps of boundaries (i.e., Gantt charts, workflow documents) (Star, 1989). These boundary objects are used for interaction among people from different groups.

Although there exist many factors that affect knowledge adaption, the specific mechanisms and rationale underlying processes of knowledge adaption are understudied. We consider that uncover these processes can shed light on why some trials of adapting experience to new businesses are successful. Moreover, exploring how to successfully adapt for new business can help practitioners as well as researchers have a better understanding of their organizational learning behaviours. Besides, the relationship between performance and knowledge adaption has not been determined.

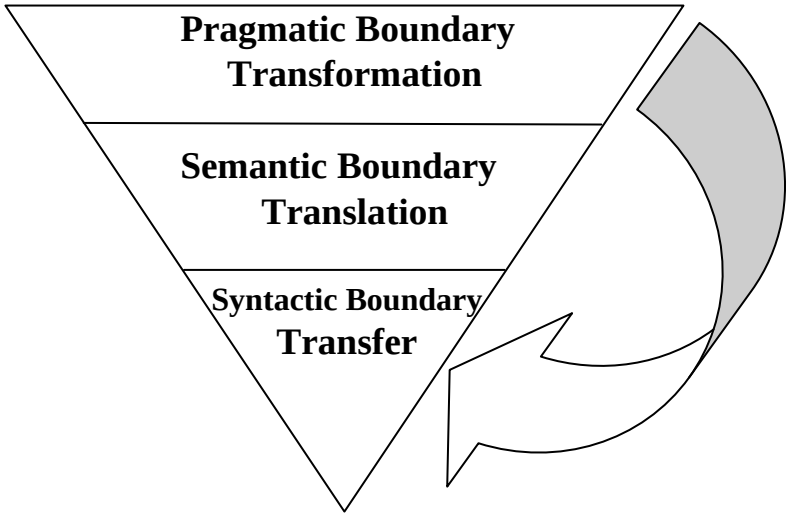
In order to address our research questions, we are primarily concerned with whether adapting experience/knowledge is helpful for improving organizational performance. However, after reviewing the literature only to find that there are inconsistent results of effects of adaption on performance. The experience and knowledge gain in related activities may have either negative or positive effects (Zollo & Reuer, 2010). Some scholars believe that experience learning from previous organizational activities does help organizations to deal with new business (Brown & Eisenhardt, 1997; Eggers & Kaplan, 2013), especially when organizations enter into new markets (Chen, Williams, & Agarwal, 2012). However, some other studies hold the opposite opinion that previous experience acts as impediments because experience may make organization have inertia to adapt to new environment. For example, Bahli and Rivard (2003) discuss the risks facing by IT outsourcing vendors, they conclude that usage of experience leads to decline in vendors' performance because vendors lose flexibilities as well as have higher costs of coordination. Zollo and Reuer (2010) also supporte the idea that experience may have negative effects when organizations confront with the high-velocity changing environment. Finally, others try to settle the conflicts by giving conditions under which the effects of adapting experience can be positive or negative (Helfat & Lieberman, 2002). For example, Bayus and Agarwal (2007) take market maturity into consideration. They argue that experience plays a limited role when the standards of markets have built up. However, it does offer great help when the markets have not had uniformed technology standards. All in all, the research findings are mixed.

However, we subscribe to the belief that one of the key factors to reconcile the conflicting findings may lie in the fact that different knowledge encourage different ways to adapt for new business (Carlile, 2004). According to the studies of Carlile (2002), we adopt this pragmatic perspective to knowledge adaption to address our research problems.

2.2 A Pragmatic Perspective to Knowledge Adaption

As success of knowledge adaption relies on knowledge management across boundaries, Carlile (2004)) developed a integrative framework to describe three complex boundaries---syntactic, semantic, and pragmatic---and three complex knowledge transfer processes---transfer, translation, and transformation. According to Carlile (2004), syntactic boundary, also named information processing boundary, is the known and clear differences between actors. A common lexicon is necessary to share so that knowledge can transfer across this kind of boundary. Semantic boundary, also named interpretive boundary, refers to differences that are unclear because of different interpretations among actors. Common meanings need to be shared so that knowledge can be translated across this kind of boundary. Finally, pragmatic boundary, also named political boundary, is a boundary because of different interests between actors who impede their ability to share knowledge. To create common interests is the way to overcome this kind of obstacle. Transforming knowledge is the way to create common interests. Although 3 kinds of boundaries demand 3 kinds of corresponding processes, these 3 kinds of boundaries are related and interweaved.

Organizations face three kinds of knowledge boundaries, and they usually deal with them one-by-one. However, processes of knowledge adaption cannot be resolved with one try, they need iterative processes of sharing and assessing knowledge, creating new agreement, and making changes where needed (Carlile, 2004). Therefore, after handling the pragmatic boundary, organizations go back to new syntactic boundary. This whole circular framework, named pragmatic perspective to knowledge adaption, describes how knowledge adaption processes go through (See figure 1). In IT outsourcing, vendors often face different knowledge boundaries and conduct different types of knowledge adaption. Lack of proper solutions to relative boundaries leads to low performance in new businesses. However, the specific mechanisms of knowledge adapting are understudied. Taking vendors' perspective, we conduct our cases study by referring to this pragmatic perspective which can guide us build up our own theory (Creswell & Clark, 2007).



Source: Adapted from Carlile (2004)

Figure 1. A pragmatic perspective to knowledge adaption

For example, from our observation of a vendor in New Zealand, their software development division often cooperates with the business consulting division. Generally, both of the two divisions describe and record what they do or what changes they make in a uniformed information system with

standardized formats. As a result, people from the other division understand what is going on (syntactic level). Next, people differently interpret those information in the system, and discuss with people from the other division to have a shared interpretation (sematic level). Then, Based on different interests, people coordinate with others to exert jobs (pragmatic level). Finally, they record what they have done in the system for further coordination. However, people involved sometimes use the same way to cross different types of knowledge boundary, which leads to misunderstanding or even conflicts. They are figuring out ways to address the problem.

All in all, using this theoretical lens, we could focus on specific processes which support us to build our own process theory.

3 PROPOSED METHODOLOGY

This study plans to conduct a cases study. Our reasons are threefold. First of all, we are going to address "how" question. It is suitable for the case study (Eisenhardt, 1989; Yin, 2013). Second, we plan to conduct an exploratory study, and the relationships between core constructs are understudied and ambiguous. As a result, qualitative methodology like the case study is suitable for us to have an in-depth exploration(Corbin & Strauss, 2014). Finally, compared with a single case study, a multiple case study can build a more generalized theory (Benbasat, Goldstein, & Mead, 1987; Lee & Baskerville, 2003).

3.1 Cases Selection and Data Collection

Based on rules of theoretical sampling (Eisenhardt, 1989), we follow the following criteria. First of all, selected cases are from IT service vendors in IT outsourcing industry. Because IT service vendors are in a turbulent industry, they are finding ways to survive and develop. One of the most important ways is to enter into new markets or to conduct new businesses by using and adapting existing knowledge. Second, as we focus on how vendors adapt their existing knowledge to new businesses, we need to select those who have similar technical backgrounds and similar business model while have different ways to adapt knowledge. During they are entering new markets, they should use different boundary objects to fulfil this goal of knowledge adaption. In accordance with these standards, we plan to select cases from both in China and New Zealand.

To date, we have interviewed seven Chinese IT service vendors and one vendor in New Zealand. Taking cooperation with informants into consideration, we select a Chinese IT service vendor, named A, and the New Zealand's vendor, named B, as our sample.

A is one of the largest offshore outsourcing vendors in China. It has been engaged in the Japanese market. However, with depreciation of Japanese Yen and rapid increase in cost of domestic labour, A's profits are compressed sharply. For example, from August 2012 to August 2015, Japanese Yen has depreciated 46%, which dramatically cuts down the profits of Chinese vendors. A is trying to transform into domestic markets. As working with Japanese clients, A accumulates tremendous amount of advantageous experience and knowledge. It plans to adapt the knowledge to guarantee success in new markets. However, the results are not that satisfactory.

B is a small-sized IT service vendor in New Zealand. It aims at helping organizations achieve their desired outcomes using IT technology. It has four business divisions which include software development, continuous computing, business consulting, and product innovation. In order to cope with fierce competitions from the whole industry, B decides to integrate its functional divisions and move up the value chain. However, what is interesting is that right now divisions act as separate silos. The coordination is costly but necessary. The reason lies in the fact that optimizing each part of an organization doesn't optimize the whole organization. A key falls in how organization handle knowledge transfer cross boundaries and merge divisions together. All in all, we choose these 2 vendors to address our research question.

The main source of data is semi-structured interviews. Our informants are including co-founders, members of top manager team, middle-level managers, project managers, on-site staffs, heads of departments, et al. (see table 1) Each interview lasts 1 to1.5 hours. We record our interviews, and transcribe them. In order to improve our validity and avoid retrospective bias, we spare no efforts in collecting data from other sources (Klein & Myers, 1999). We also retrieve public information about vendors. For example, we collect online news, accounting reports, and website information of sampling cases.

Case	Numbers of Staff	Title of Informants	Interview Time	Numbers of Interviews
A	1500	CIO, CCO, Vice-President, General Manager, Vice-General Manager, Head of Quality Control, Chief Secretary, Head of Division, Project Manager	2010.7, 2012.4,2013.9,2015.1	17
B	46	CEO, Head of Business Consulting Department, Head of Product Innovation Department, Head of Continuous Computing Department, Team Leader in Software Development Department	2015.9 2015.10, 2015.11	5

Table 1. Current situation of data collection

3.2 Data Analysis Method

According to Pettigrew (1990), we plan to conduct a 4-step analysis. First, based on interviews and information collected from documents and online database, we develop the analytical chronology of 2 cases. We use the analytical chronology to describe the history about how 2 vendors enter into new markets and how they conduct new businesses. Second, based on the analytical chronology, we plan to highlight the data that are related to our research questions. By analysing these data, we form dialogical cases. Third, referring to the theoretical lens---the pragmatic perspective to knowledge adaption, we code constructs from dialogical cases and explore initial relationships. At last, we conduct cross-case comparisons, and develop our theory inductively.

4 CURRENT STAGE OF THE RESEARCH

Right now, we have initially made the research design, and collected and analysed the first turn of data. We are starting to conduct open-coding at this moment.

5 EXPECTED FINDINGS

We plan to develop a theoretical model to explain how IT service vendors use boundary objects successfully to adapt existing knowledge to new business. As a result, our core constructs may be boundary objects, existing knowledge, routines, knowledge adaption and vendors' performance. We plan to code data to give specific contents of these constructs and develop clear relationships. Existing knowledge could include but not limit to business domain knowledge, which refers to knowledge from previous clients' domain, relationship knowledge that refers to knowledge from specific relationships with clients, and situated knowledge which refers to knowledge from different communities of practice. Routines, which act as methodology to deliver knowledge, include tools development, regular meetings, and organizational and divisional training. Knowledge adaption includes codification, knowledge transfer, and knowledge integration. The brief model should be like the following figure 2.

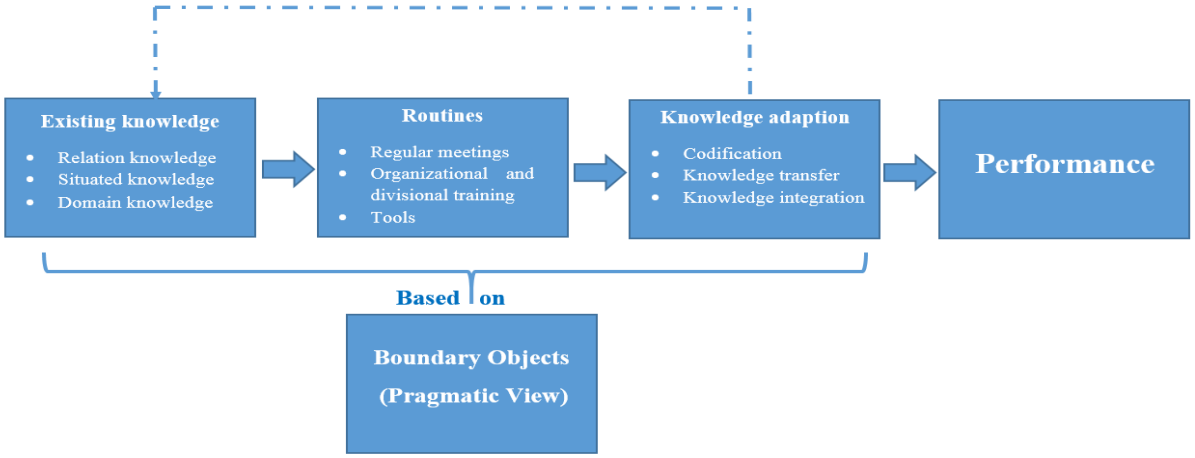


Figure 2. The brief model of knowledge adaption

6 PLANS FOR COMPLETION

The following table shows the timetable for completing this research.

Time	Tasks
Sep. 2015-May. 2016	Polishing the research topics into more specific research questions;
	Keeping on collecting data in New Zealand.
	Acquiring ethics approval; Making preparation for data collection in China.
	Polishing my proposal.
June. 2016-Nov. 2016	Collecting data in China.
	Conducting analysis of data while making iterative comparisons between data and literature.
	Selecting more appropriate theoretical lens and writing literature review and finishing data analysis of my dissertation.
Dec.2016-May.2017	Finishing my dissertation.

Table 2. Plan for completing the research

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